Comments on RM-11829

RCA Amateur Radio Club - W9RCA
Indianapolis, IN

The RCA ARC of Indianapolis was established in 1956 as a RCA employees amateur radio club.

The RCA ARC has operated the W9RCA repeater on 146.28/88 MHz since 1973. It uses remote receivers located around the Indianapolis, IN with 70 cm links to a receiver voting system and controller at the transmitter. The repeater has a control link on 70cm.

The repeater uses a Yaesu Fusion FM/Digital mixed mode system.

We operate a 6 meter beacon on 50.069 MHz with a control link on 70 cm.

We started doing VE testing in 1993 and we have had licensing classes starting back in the 60s.

RCA Amateur Radio Club had a club station located at RCA/Thomson Consumer Electronics from 1970 to 2004.

Comments:

There has been a lot of discussion about the need for an entry class license the last couple of years.

RM-11829 proposes a new entry class license license class that creates a 99 channel sub band based on a GMRS model.

Tryo will have its own repeater coordination and repeater license committee and wants the radio used on the Tryo Sub Band to be type accepted radios meeting Tryo specs.

RM-11829 wants to establish a 99 channel sun band. We don't think amateur radio should start channelizing the bands.

Instead of creating a new sub band and new amateur radio infrastructure it would be better to use existing repeaters and repeater coordination.

RM-11829 wants to limit the age for getting the entry-level Tryo license of 11 years old.

We have had a 8 and a 9 year old pass the Technician exams this year.

The petitioner states that the Technician exam is to tough for non-radio people

Our pass rate at the VE test sessions for 2018 for the Technician exam was 80% and most went on the get their General License.

We get a mix of non-radio people, preppers & survivalist, doctors, nurses, remote control drone operators, Salvation Army Personal and a retire woman who just wanted a ham license.

We don't agree was the proposed cross-band linking.

It looks like he is trying to circumvent the rules and let the Tryo licenses to exceed their control operator privileges by cross-banding even to HF frequencies under the supervision. management or using a station with a higher class license.

This is covered in Part 97 as third party, maybe he is trying to redefine it to make it a feature of the Tryo license and the control operator requirements

The Novice license died out as most opted for to take the exam for the Technician License. With the additional HF privileges proposed in Petition RM-11828 makes it is even more attractive as an entry class license.

Amateur Radio is not channelized. Amateur Radio uses band plans developed by amateurs and to meet the regional frequency, terrain and population needs.

This has allowed amateur to evolve and adapt to new technologies and frequencies demands in different areas of the country.

Amateur Radio allows for experimentation with different modes and technologies.
They can be wide or narrow bandwidth; TV both analog and digital, (image), data, propagation beacons, meteor scatter, moon bounce (EME), analog voice (SSB/FM), digital voice and data and spread spectrum.

Amateur Radio is switching from FM to digital; DMR, Yaesu Fusion, D-Star and other digital modes.

There are amateur radio HTs, mobiles and repeaters that are available for mixed mode digital voice/data and FM operations.

RM-11829 states Interoperability is the major priority for the Tryo sub band and does not want to use technologies that require a license or royalties to manufacture. He also want to use radios type accepted meeting specs for the Tryp sub band.

This limits the of new technologies such as use of Motorola DMR and Yaesu Fusion that are already being used in amateur radio and they are proven technologies.

The petitioner talks about using surplus radios like Motorola or GE Master II but then wants type accepted radio for the Tryo radios????

There are new amateur radio HTs, mobiles and repeaters that are available for mixed mode digital voice/data and FM operations.

Motorola, Kenwood digital repeater and HTs are showing up on the used/surplus market. They are being re-proposing as ham radio repeaters.

Yaesu offered a special deal for amateur clubs to buy a mixed mode Fusion Digital / FM repeater.

RM-11829 is GMRS on steroids and want to use the amateur bands, but at the same time is a very limited experience on what amateur radio has to offer to a new ham.

Even the Novice class license offered a greater flexibility and offers a better amateur radio experiences, then the Tryo entry class license. The Novice class license offered a wide variety of modes on different bands including HF bands.

BTW: FT8 is one of the latest digital modes and came out about the time this petition was written in 2017. Now it represents 30% of the contacts being made on HF and 6 meters. WSJT-X has more digital modes used for moon-bounce (EME) and meteor scatter.

The Novice License (no longer issued) would be a better starting point for an entry class license

a). Offering the Novice licenses again would not require creating new infrastructure within amateur radio.
It does not require any new sub bands like proposed for the Tryo License class
There is a recognized bandplan and amateur radio repeater coordination for the 1.25
meter and 23 centimeter allocations.

There are 1.25M repeaters already on the air as well as CW and SSB operation.

b). The 1.25MHz HTs are about the same cost. Examples are the Baofeng 5RX3 and the UV82X.

Kenwood has released the TH74A triband D-Star HT. It is more expensive but not compared to other hi-end HTs from major manufacturers for 2M and 70CM.

Bridgecom has also introduced BCR-220 a dual mode FM/Digital digital repeater.

Novice allocations in the 1.25 meter band (222 – 225 MHz) Power 25W

a)The 1.25 MHz novice band many modes of operation: FM, SSB, digital voice and data, image, RTTY, packet, PSK31, FT8 and other data privileges.

b) The range would be better for the same power compared to 70 Centimeters.

Novice allocation - 23 Centimeter band (1270 – 1295 MHz) Power 5W

a) No HTs are currently available, but there have been a few in the past. There are radios intended for satellite use like the IC-9700 or IC-9100 and the FT736, but the output power is too high.

New allocation
2.4 GHz Allocation - Mesh Network (2300-2310 GHz & 2390-2450 GHz)

Broadband Hamnet and RC Drones

a) Mesh Networks are still new, but it could be with an app on a cellphone allow access that could use reprogram WiFi routers that connect to the internet, maybe link to digital repeaters.

Allow Novices to used 2 meter and 70 Centimeter link to 222 MHz and 23 CM repeaters.

a) Many 222 MHZ repeaters already have cross-band linked to 2m or 70CM provided the linking is under the control of the control operator.

b) The Novice License is a more advanced class of license then the proposed Tryo license. They demonstrated a knowledge of the rules and regulations as well as operating procedure by passing a written exam.

Allow Novices to use the links as long as they did not not initiate or control the link. This would be limited to linking or cross-banding to 2M and 70CM.

I don’t think that the Novice license should be added as a license step and carries no credit for the Technician license.

The Technician License would still be the first in the series in the required license steps; Technician, General and Extra.

70 cm is not a good choice for the Tryo sub band

The petitioner makes the best point for not using 70 cm for the Tryo Sub Band with the wind profile in Denver and other interference sources materializing are causing problems for repeater in Denver.

97.303

(b) Amateur stations transmitting in the 70 cm band, the 33 cm band, the 23 cm band, the 9 cm band, the 5 cm band, the 3 cm band, or the 24.05-24.25 GHz segment must not cause harmful interference to, and must accept interference from, stations authorized by the United States Government in the radiolocation service.

(m)*In the 70 cm band:*

(1) No amateur station shall transmit from north of Line A in the 420-430 MHz segment. See § 97.3(a) for the definition of Line A.

(2) Amateur stations transmitting in the 420-430 MHz segment must not cause harmful interference to, and must accept interference from, stations authorized by the FCC in the land mobile service within 80.5 km of Buffalo, Cleveland, and Detroit. See § 2.106, footnote US230 for specific frequencies and coordinates.

(3) Amateur stations transmitting in the 420-430 MHz segment or the 440-450 MHz segment must not cause harmful interference to, and must accept interference from, stations authorized by other nations in the fixed and mobile except aeronautical mobile services.

Here's a link to a very good map that you can zoom right down to the cat's whisker to find out just where "Line A" is.

https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/general/frequency-coordination-canada

The 70 Centimeter band is the backbone of the VHF/UHF amateur radio bands.

RM-11829 proposes the 99 channels Tryo would only occupy only 2.25 MHz, but does not talk about the impact on the current users of the band.

a) The 2.25 MHz requested would decimate the current band plan. It would be easier to accommodate a new entry-level class within the existing band plan and repeater coordination structure.

b) 1 MHz of the bottom of the band, 420 MHZ to 421 MHz (these frequencies are used for repeater linking)

420–426 MHz is also used for repeater linking. Out west it is used for mountain top to mountain top linking. Examples are the Upper Rio FM Society linking system covering most of New Mexico and The Cactus Intertie linked system covering large

portions of California, Arizona, New Mexico, Nevada, Utah, Colorado and Texas.
These are duplex links with 5 MHz separation and are in the lower part of the 70 cm

c)The low end of 70 centimeter bands is used differently in different areas of the US. Common use is for links both one way and duplex links with 5 MHz separation between transmit and receive links.

70 cm is popular for amateur to experiment analog or digital TV and that is in the 420–426 MHz part of the band.

e) 1.25 MHz from the top of the band 448.75 MHz to 450 MHz
The 1.25 MHz is currently used for repeater inputs.
RM-11829 did not include any data on how many of the current 70 cm repeaters will be forced to change frequencies.

f) 440 MHz repeater frequencies are always in high demand especially with more digital repeaters coming on line.

g) Each state or region has adapted the band to their needs and interests. California and the east coast have large populations, New Mexico, Arizona and Texas and have large area with mountains and low populations

h) The repeater coordination and license committee proposed in the petition are new separate coordinating bodies for the TRYO sub band.

This is infrastructure that already exits in amateur radio, that the petition took a lot of words to explain.

Existing state and regional repeater coordinators have the experience working with each other to resolve issues. They have the knowledge and software to get the coordination completed.

TRYO Open repeater requirement

The RM-11829 definition of a repeater is more like a commercial TV or radio station license operated in the public interest. The Tryo repeater coordination and licensing committee decides who can put on a repeater and where it is located.

a) As a repeater owner and operator we feel we have the right to say who can use it. After all the repeater is an extension of our club station license and my license as a control operator.

The use of the repeater is a privilege granted by the station licensee or the control operator, not a right.

b) A repeater cost around $1500, cavities $1500, antenna $500, controller $600, 7/8” Heliax about $5 foot new (can find some used or salvage for less).

c) Tower space is getting harder to find and they want to charge for it.

d) You will have to pay someone to climb the tower and put up the antenna and feed line.

e) Depending on where it is located you may have to do an environmental impact study, noise floor for the site and RF exposure.

f) Ongoing operating cost: power $60 a month, internet $60 a month, Liability insurance $350 a year, maintenance $350.

g) The W9RCA repeater was put on the as a project for the club to experiment with an repeater technology and not a public service, that was a side benefit.

The controllers, software were done by club members. The GE receivers, link transmitters and even the Yaesu Fusion repeater has been modified by us.

Online Licensing

RM-11829 proposes on online process similar to getting a GMRS license with a few basic questions with to promise from an amateur to be a mentor.

Getting an amateur radio license demonstrates that the licensee has a basic understanding of CFR47, Part 97 Rules and Regulations governing Amateur Radio, standard operating practices, and RF and electrical safety.

A GMRS license demonstrates that they had $65.

The Tryo license demonstrates that they did not have pay $65 to get a license, they could answered a few simple questions about amateur radio and would work with a mentor.

A Promise to be Mentor

The words “Promise” and “Commitment” to be a mentor are used in the petition. This is pretty vague.

There is no definition of what is expected of the mentor and even that the Tryo licensee has to cooperate with the mentor after getting the license.

Is mentoring as simple as showing the new Tyro licensee how to turn on the HT, where the squelch, volume control and PTT button are located and what repeaters are on the air? Maybe help in making one contact.

The mentoring process lacks accountability and with no requirements, no workbook or checklist to be used by the mentor.

No requirements that the mentor or the Tyro licensee have to completes mentoring process.

Mentoring should be done or at least start before the exam to be effective.

The mentoring should be done before taking the exam. This will give the mentor time to go over the basics of repeater and amateur radio practices and give an overview of Part 97 amateur radio and regulations.

The Tryo license application will include the mentor's name and call sign and that the mentor will take responsibility for completing the mentoring process.

Option 1 : A workbook should be developed so that the mentoring has structured plan to follow. The mentoring should start before taking the exam and the workbook required to complete before the exam and a requirement to before taking the exam. This would be the study guide for the exam and could be done online so the mentor to follow the progress and help if needed.

Option 2: The mentor will give an overview of CFR47 Part 97 amateur radio regulations and operating practices. Explain the different call signs available for the different license classes and the vanity call signs.

The mentor would required to demonstrate how to program and use a HT, what is the purpose of: PTT, volume, squelch, memory and VFO operation as well as simplex and repeater operation.

The Mentor would demonstrate the proper way to make call on the repeater and supervise the applicant while making 5 contacts. If possible, check into a net and make a contact on the HF bands.

The Online Exam:

The exam would be made up of of 25 questions selected from a 250 question pool 19 correct to pass. Question selected from each section of the question pool.

The test questions could be generated similar to ARRL VEC test generator. This does add integrity to the exam by allow each exam to be different. Each applicant would get an exam with different different questions and as would an applicants retaking the exam.

The question pool would be created and maintained by the NCVEC

Material covered in each section:

a) FCC Rules, descriptions, and definitions for the Amateur Radio Service, operator and station license responsibilities.

b) Authorized frequencies: frequency allocations; ITU; emission modes; restricted sub-bands; spectrum sharing; transmissions near band edges.

c) Operator licensing: operator classes; sequential and vanity call sign systems; International communications; reciprocal operation; places where the Amateur Radio Service is regulated by the FCC; name and address on the FCC license database; license term; renewal; grace period.

d) Authorized and prohibited transmission: communications with other countries; music; exchange of information with other services; indecent language; compensation for use of station; re-transmission of other amateur signals; codes and ciphers; sale of equipment; unidentified transmissions; one-way transmission.

e) Control operator and control types: control operator required; eligibility; designation of control operator; privileges and duties; control point; local, automatic and remote control; location of control operator.

f) Station identification; repeaters; third-party communications; club stations; FCC inspection.

g) Station operation: choosing an operating frequency; calling another station; test transmissions; procedural signs; use of minimum power; choosing an operating frequency; band plans; calling frequencies; repeater offsets.

h) VHF/UHF operating practices; FM repeater; simplex; splits and shifts; CTCSS; DTMF; tone squelch; carrier squelch; phonetics; operational problem resolution; Q signals.

I) Public service: emergency and non-emergency operations; applicability of FCC rules; RACES and ARES; net and traffic procedures; operating restrictions during emergencies.

k) Radio wave characteristics: properties of radio waves; propagation modes.

l) Amateur Radio practices and station set-up.

j) Basic electrical principles, units, and terms: current and voltage; conductors and insulators; alternating and direct current.

o) Basic electronic components; switches, didoes, transistors, FET, IC, resistor, capacitors and instructors.

p) Station equipment: common transmitter and receiver problems; antenna measurements; troubleshooting; basic repair and testing.

q) Station equipment: receivers; transmitters; transceivers; modulation; transmit and receive amplifiers.

r) Common transmitter and receiver problems: symptoms of overload and overdrive; distortion; causes of interference; interference and consumer electronics; Part 15 devices; over-modulation; RF feedback; off frequency signals.

s) Antenna measurements and troubleshooting: measuring SWR; dummy loads; coaxial cables; causes of feed line failures.

t) Antennas and feed lines – Antennas: vertical and horizontal polarization; concept of gain; common portable and mobile antennas; concept of vertical, dipole and beam antennas.

u) Electrical safety: AC and DC power circuits; antenna installation; RF hazards Power circuits and hazards: hazardous voltages; fuses and circuit breakers; grounding; lightning protection; battery safety; electrical code compliance.

This is a Self Study Exam. It would consist of a video going over the material for one section and it can be repeated as many times as the applicant wants followed by the exam for that section.

Once they completed the exam for that section the results displayed.

a) The number correct and the number wrong.

b) Show the question and the correct answers for the ones answered wrong.

c) A running total of correct and wrong answers.

After the section exam completed and scored, they must proceed to the next section.

a)They can not repeat a section once they have answered the exam questions for a section and the score has been recorded.

They repeat the process until the exam is completed.

a) The applicant will receive a report when the test is completed with Pass or Fail grade and the total number right and wrong and the number wrong for each section.

The exam can be taken twice. If the exam is failed both times, the applicant will have to wait 24 hours before taking the exam again.

a) This will give the applicant and the mentor time to go over the material before taking the exam again.

If passed the applicant passes the exam, the exam and the results will be submitted to the VEC or FCC.

They will receive a Certificate of Successful Completion of the Examination (C.S,C.E.).

This idea came out of a discussion with VEs at a hamfest on how clubs might be able to offer Technician licensing classes with testing on-line.

This is an open book type of exam so there would be no published question pool. There could be some study material available.

Since this fits in with the mentoring process, the mentor would the proctor the exam and work with the applicant to complete the exam. The exam could be completed at the applicant home at his own pace and once completed it could sent to mentor for approval and to submit to the VEC or FCC.

This type of exam is slow to take and it should be limited to about two hours to complete the exam.

Some allow you to skip the video presentation and go to the exam others don't.

This type of self study exam are common with many employers for sexual harassment, worker safety, the AARP uses it for their Safe Driving Course and FDA courses related to medical equipment design, testing and handling blood and viruses.

Some of the FDA material took up to four hour to complete. You were allowed to pause them and come back later to complete them.